

Claims

1. A gas generating composition comprising Component (a) and, if required, Component (b) of the followings:

(a) melamine cyanurate or a mixture of melamine cyanurate and a nitrogen-containing organic compound serving as a fuel

(b) oxygen-containing oxidant.

2. The gas generating composition according to claim 1 further comprising, if required, one or at least two selected from Component (c) and Component (d) of the following:

(c) binder

(d) additive selected from metal oxides, metal hydroxides, metal carbonates, boric acid, metaboric acid and the like.

3. The gas generating composition according to claim 2, wherein the content of Component (a) is 10 to 60% by mass, and the content of Component (b) is 40 to 90% by mass.

4. The gas generating composition according to claim 2, wherein the content of Component (a) is 10 to 60% by mass, the content of Component (b) is 40 to 90% by mass, the content of Component (c) is 0 to 15% by mass, and the content of Component (d) is 20% by mass or less.

5. The gas generating composition according to any one of claims 1 to 4, wherein, when the fuel of Component (a) is a mixture of melamine cyanurate and a nitrogen-containing organic compound, the nitrogen-containing organic compound is one or at least two selected from the group consisting of

tetrazole compounds including 5-aminotetrazole and ammonium bitetrazole; guanidine compounds including nitroguanidine, guanidine sulfate and dicyandiamide; and triazine compounds including melamine, trimethylol melamine, alkylated methylol melamine, ammeline, ammelande, nitrate salt of melamine, perchlorate salt of melamine, trihydrazino triazine and nitrated compound of melamine.

6. The gas generating composition according to any one of claims 1 to 5, wherein the oxygen-containing oxidant of Component (b) is one or at least two selected from the group consisting of metal nitrates, ammonium nitrate, metal perchlorates, ammonium perchlorate, metal nitrites, metal chlorates, basic copper nitrate, basic cobalt nitrate, basic zinc nitrate and basic manganese nitrate.

7. The gas generating composition according to any one of claims 2 to 6, wherein the binder of Component (c) is one or at least two selected from the group consisting of carboxymethyl cellulose (CMC), sodium carboxymethyl cellulose, potassium carboxymethyl cellulose, ammonium carboxymethyl cellulose, cellulose acetate, cellulose acetate butylate, methyl cellulose, ethyl cellulose, hydroxyethyl cellulose, ethylhydroxyethyl cellulose, hydroxypropyl cellulose, carboxymethylethyl cellulose, microcrystal cellulose, polyacrylamide, amino compound of polyacrylamide, polyacrylhydrazide, acrylamide/acrylic acid metal salt copolymer, polyacrylamide/polyacrylic acid ester compound

copolymer, polyvinyl alcohol, acrylic rubber, guar gum, starch and silicone.

8. The gas generating composition according to any one of claims 2 to 7, wherein the additive of Component (d) is one or at least two selected from the group consisting of metal oxides including copper oxide, iron oxide, zinc oxide, cobalt oxide, manganese oxide, molybdenum oxide, nickel oxide, bismuth oxide, silica and alumina; metal hydroxides including aluminum hydroxide, cobalt hydroxide, iron hydroxide and magnesium hydroxide; metal carbonates or basic metal carbonates including cobalt carbonate, calcium carbonate, basic zinc carbonate and basic copper carbonate; complex compounds of metal oxides or hydroxides including Japanese acid clay, kaolin, talc, bentonite, diatomaceous earth and hydrotalcite; metal acid salts including sodium silicate, mica molybdate, cobalt molybdate and ammonium molybdate; silicone, molybdenum disulfide, calcium stearate, silicon nitride, silicon carbide, metaboric acid, boric acid and boric anhydride.

9. The gas generating composition according to claim 1 comprising melamine cyanurate as Component (a) and basic copper nitrate as Component (b).

10. The gas generating composition according to claim 1 comprising 15 to 40% by mass of melamine cyanurate as Component (a) and 60 to 85% by mass of basic copper nitrate as Component (b).

11. The gas generating composition according to claim

1 comprising 15 to 60% by mass of a mixture of melamine cyanurate and guanidine nitrate as Component (a) and 40 to 85% by mass of basic copper nitrate as Component (b).

12. The gas generating composition according to claim 1 comprising 15 to 50% by mass of a mixture of melamine cyanurate and melamine as Component (a) and 50 to 85% by mass of basic copper nitrate as Component (b).

13. The gas generating composition according to claim 1, comprising 15 to 50% by mass of a mixture of melamine cyanurate and ammonium bitetrazole as Component (a) and 50 to 85% by mass of basic copper nitrate as Component (b).

14. The gas generating composition according to claim 2 comprising melamine cyanurate as Component (a), basic copper nitrate as Component (b) and sodium carboxymethyl cellulose or guar gum as Component (c).

15. The gas generating composition according to claim 2 comprising 15 to 30% by mass of melamine cyanurate as Component (a), 40 to 90% by mass of basic copper nitrate as Component (b) and 0.1 to 10% by mass of sodium carboxymethyl cellulose or guar gum as Component (c).

16. The gas generating composition according to claim 2 comprising 15 to 50% by mass of a mixture of melamine cyanurate and guanidine nitrate as Component (a), 50 to 80% by mass of basic copper nitrate as Component (b) and 0.1 to 10% by mass of sodium carboxymethyl cellulose or guar gum as Component (c).

17. The gas generating composition according to claim

2 comprising 15 to 30% by mass of a mixture of melamine cyanurate and melamine as Component (a), from 60 to 80% by mass of basic copper nitrate as Component (b) and from 0.1 to 10% by mass of sodium carboxymethyl cellulose or guar gum as Component (c).

18. The gas generating composition according to claim 2 comprising 10 to 30% by mass of melamine cyanurate as Component (a), 40 to 90% by mass of basic copper nitrate as Component (b), 0.1 to 10% by mass of sodium carboxymethyl cellulose as Component (c), and 0.5 to 15% by mass of aluminum hydroxide as Component (d).

19. The gas generating composition according to claim 2 comprising 10 to 50% by mass of a mixture of melamine cyanurate and guanidine nitrate as Component (a), 40 to 90% by mass of basic copper nitrate as Component (b), 0.1 to 10% by mass of sodium carboxymethyl cellulose as Component (c), and 1 to 10% by mass of aluminum hydroxide as Component (d).

20. The gas generating composition according to claim 2 comprising 10 to 30% by mass of a mixture of melamine cyanurate and melamine as Component (a), 40 to 90% by mass of basic copper nitrate as Component (b), 0.1 to 10% by mass of sodium carboxymethyl cellulose as Component (c), and 0.1 to 15% by mass of aluminum hydroxide as Component (d).

21. The gas generating composition according to claim 2 comprising 10 to 30% by mass of melamine cyanurate as Component (a), 40 to 90% by mass of basic copper nitrate as Component (b), 0.1 to 10% by mass of sodium carboxymethyl cellulose as Component

(c), and 1 to 10% by mass of magnesium hydroxide or metaboric acid as Component (d).

22. The gas generating composition comprising 10 to 30% by mass of melamine cyanurate as Component (a), 50 to 80% by mass of basic copper nitrate as Component (b), 0.1 to 10% by mass of sodium carboxymethyl cellulose as Component (c), and 0.1 to 10% by mass of one or at least two additives selected from the group consisting of aluminum oxide, silica, Japanese acid clay and diatomaceous earth as Component (d).

23. A molded article of a gas generating composition in a shape of a single-perforated cylinder or perforated (porous) cylinder obtained by extrusion of the gas generating composition according to any one of claims 1 to 22.

24. A molded article of a gas generating composition in a shape of pellet obtained by compression-molding the gas generating composition according to any one of claims 1 to 22.

25. An inflator for air bag using the gas generating composition according to any one of claims 1 to 22 or the molded article of the gas generating agent according to claim 23 or 24.